

REMARKS

Claims 1-10, 12, and 13 are pending in the present application.

Applicants wish to thank examiner Leonard for the helpful and courteous discussion held with their U.S. representatives on January 13, 2010. At that time, Applicants' U.S. representatives argued that Ito (JP-2002-097244) does not disclose α -hydroxy-carboxylic acid, and that there was no motivation to combine Joern with Ito because the soluble carboxylic acids of Joern would be contrary to the intended purpose of the ascorbic acids of Ito; namely as an insoluble co-catalyst which can be easily filtered following the reaction. The following is intended to expand upon the discussion with the Examiner.

Claims 1-3, 5, 7, 10 and 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito (JP-2002-097244). Applicants respectfully disagree.

Specifically, Ito fails to disclose "the presence of at least one trimerization catalyst selected from the group consisting essentially of the ammonium salts, substituted by four hydrocarbon radicals, of α -hydroxy-carboxylates" according to Claim 1 of the present invention. Ito discloses ascorbic acid as a co-catalyst combined with a number of isocyanuration catalysts, including organic weak acid salts such as acetic acid tetraethylammonium salt [0016]. The Examiner alleges that the ascorbic acid disclosed in Ito is a α -hydroxy carboxylic acid (Official Action, pg. 3, line 18-19). However, Although ascorbic acid behaves as a vinylogous carboxylic acid, ascorbic acid is not an α -hydroxy-carboxylic acid. Accordingly, Ito does not anticipate the present invention because Ito fails to disclose ammonium salts, substituted by four hydrocarbon radicals, of α -hydroxy-carboxylates.

In view of the foregoing, Applicants request withdrawal of the 102(b) rejection over Ito.

Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito in view of Joern (U.S. Patent Pub. No. 2004/0186194). The Examiner recognizes that Ito does not disclose the specific alpha-hydroxy compounds of claims 4 and 6, and argues that it would have been obvious to substitute the carboxylic acids of Ito with those of Joern.

However, the substitution of the α -hydroxy-carboxylic acids listed in Joern with the acid of Ito is not *prima facie* obvious because Ito does not disclose any α -hydroxy-carboxylic acids. Furthermore, Ito teaches that ascorbic acid is used because it is insoluble in the reaction medium and can be easily filtered to obtain polyisocyanate with few impurities. However, the carboxylic acids of Joern are soluble, especially when combined with the ammonium salt of Ito. Therefore, one skilled in the art would not find motivation in Ito to substitute insoluble acids with the soluble acids of Joern.

Moreover, there would be no motivation to combine the references since there is no reasonable chance of success in this combination. Specifically, a combination of Joern and Ito would result in the use of ammonium hydroxide as trimerization catalysts with carboxylic acid as a co-catalyst. As evidenced by Pedain (US 6,765,111), one skilled in the art would be aware of the following negative results that would occur if ammonium hydroxide and carboxylic acid were dosed together in an isocyanate containing reaction mixture:

1) the acids would act as stoppers for the trimerization catalysts (Pedain; Col. 4, lines 63 et seq.);

2) on dosing ammonium hydroxide and an acid together in an isocyanate containing reaction mixture, the hydroxide and the acid would react and water would be produced. Water, however, cannot be present when trimerizing the (cyclo)aliphatic diisocyanates

because water will react with the isocyanate, setting free the corresponding amine and producing CO (Present Specification; pg 7, lines 36-38). The CO would interfere with the trimerization of hexamethylene diisocyanate in the presence of ammonium hydroxide (Pedain; Col. 1, lines 44-49; and Col. 2, lines 65 et seq.). In addition, the corresponding amine is reactive towards isocyanate groups, and would lead to byproducts, such as urea derivatives, which usually exhibit a low solubility and often precipitate (Pedain; Col. 1, lines 59-62); and

3) the acid as a co-catalyst may react with an isocyanate group and not the hydroxide (Pedain; Col. 1, lines 59-62), producing carbon dioxide, which may in turn react with the hydroxide ion and yield a hydrogen carbonate ion (HCO_3), which is not catalytically active and would stop the reaction.

Accordingly, if the person skilled in the art thought to combine Ito and Joern, he would expect the above-mentioned disadvantages of dosing ammonium hydroxide and acid separately into in isocyanate containing mixture. Hence, there would be no motivation to combine the references since there is no reasonable chance of success in this combination.

In view of the foregoing, withdrawal of this ground of rejection is requested.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ito in view of Brandt (U.S. 5,489,663). However, Brandt fails to cure the deficiencies of Ito. Specifically, as was the case discussed above with Ito, Brandt fails to disclose “the presence of at least one trimerization catalyst selected from the group consisting essentially of the ammonium salts, substituted by four hydrocarbon radicals, of α -hydroxy-carboxylates.” Accordingly, Applicants request withdraw of this rejection.

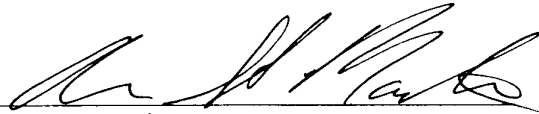
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Conclusion

Applicants submit that the present application is now in condition for allowance.
Early notification of such action is earnestly solicited.

Respectfully submitted,

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